

Table 3-D (cont.)

Plant Number	Position of Spm	Ear						Pollen
		I		II		t-1	t-2	
7583C-1	W++ wyspm + 1spm	+	-			+	+	
" C-2	W++ wyspm + 1spm	+	d					
" C-3	W++ wyspm + 1spm	+	d					
" C-4	W++ wyspm + 1spm					+	+	
" C-5	W++ wyspm + 1spm	+	[-]					
" C-6	W++ wyspm + 1spm	+	[-]					
" D-1	W++ wyspm + 1spm	+	d					
" D-2	W++ wyspm + 1spm			+	[-]			
7591	FROM 7455 B-2, 1st ear, main stalk (see Table 4) x 7308 D-2, tiller-1							
" A-1	W++ wyspm + 1spm	-	-	-	-	+	-	
" A-2	W++ wyspm + 1"	+	-					
" A-3	" " " "	+	-					
" A-4	" " " "	+	-					
" A-5	" " " "	-	-					
" A-6	" " " "	+	-					
" A-7	W++ wyspm	+	0					
" A-8	" " " "	+	0					
" B-1	W++ wyspm	+	0	+	0			
" B-2	W++ wyspm	-	[0]	+	0			
" B-3	W++ wyspm	-	[0]	-	[0]	+	0	+
T " B-4	W++ wyspm	+	0	+	0			
" B-5	W++ wyspm	+	0					
7595	FROM 7455 C-5, 1st ear, main stalk (see Table 4) x 7308 D-2, tiller-1							
" A-1	W++ wyspm + 1spm	+	-	+	-			
" A-2	W+ w	red		red				
" A-3	W+ w	-						
" A-4	W++ wyspm	+	-	-	+			
" A-5	" " " "	[+-]						
" A-6	W++ wyspm + 1spm	d	-	+	-	+	+	
" A-7	" " " "	+	-					
" B-1	" " " "							
" B-2	W++ wyspm	+	0					
B-3	" " " "	+	0					
B-4	" " " "	+	0					
B-5	" " " "	+	0					
B-6	" " " "	+	0					

Table 3 D, Continued

Year 1960

Cross

			I	II	t-1	t-2	t-3	Pollen	
7816	From colorless BE in kernels on ear of 7570C allel-1 (see B, Table 3) x a <sub>2</sub> bt/a <sub>2</sub> bt, w <sub>4</sub> w <sub>4</sub> , v <sub>0</sub> Sp <sub>14</sub> 07								
" -1									
" -2	a <sub>2</sub> bt/a <sub>2</sub> bt BE/a <sub>2</sub> bt <sup>Hybrid Spun = 3</sup>				+++				
" -3	w <sub>4</sub> w <sub>4</sub> , 1 Spun				+	+			
7817	From colorless BE in kernels on first ear, main stalk of 7570C (see B, Table 3) x a <sub>2</sub> bt/a <sub>2</sub> bt, w <sub>4</sub> w <sub>4</sub> , v <sub>0</sub> Sp <sub>14</sub> 07								
1	1 Spun				+	+			
2									
3	1 Spun				+	+			
4	1 Spun		+						
7818	From colorless in kernels on 2nd ear, main stalk of 7570C (see B, Table 3) x a <sub>2</sub> bt/a <sub>2</sub> bt, w <sub>4</sub> w <sub>4</sub> , v <sub>0</sub> Sp <sub>14</sub> 07								
A-1	Spun/Spun				+	+	+	+	
A-2	1 Spun				+				
B-1	1 Spun				+				
" -2	1 Spun				+				
" -3	Spun/Spun				+				
" -4	Spun/Spun							+	+
" -5	Spun/Spun							+	+
" -6									
" -7	1 Spun				+		+		
" -8	1 Spun				+		+		
" -9	Spun/Spun		+	+				+	+
" -10	1 Spun		+		+			+	
" -11	Spun/Spun		+	+					
7779	From second ear, 7569-3 (see Table 3-D, Year 1958) x a <sub>2</sub> bt/a <sub>2</sub> bt, w <sub>4</sub> w <sub>4</sub> , v <sub>0</sub> Sp <sub>14</sub> 07								
A-1	w <sub>4</sub> w <sub>4</sub>		rd						
-2	" "		rd						
-3	" "		-						
-4	" "								
-5	" "								
-6	" "		rd						
B-1	" "		rd						
2	" "		rd	rd					
3	" "								
4	" "		rd						
5	" "		d						
6	" "		rd	rd	rd	rd			

Table 3 D, Continued  
Year 1960

Plant Number	Position of Spm	Cross.					Pollen
		I	II	C-1	C-2	C-3	
7780	From inter, main stalk of 7599 B-4 (see A, Table 2, Year 1958) x a <sub>2</sub> bt/a <sub>2</sub> bt w + 1/4 spm						7538 14 of
7783	From 7545 A-4 <sup>1</sup> x 7538-3 a <sub>2</sub> bt/a <sub>2</sub> bt						
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
7784	From 7602-2						
A							
B							
C							
1							
2							
3							
4							
7785	From 7602-3						
A-1	w + w; 2 spm						
2							
3	w + w; 2 spm	+	+	+	+		
B							
1							
2							
3							
4							
5	w + w						
7586	From 7613 B-7						
A-1							
2							
3							
4							
B-1							
2							
3							

Table 4. Tests of Spm activity in progeny of plant 7109C-4.

Activity of Spm in cells that give rise to

Year	Plant	Genotype	Spm	First ear main stalk	2nd ear main stalk	Gen of tiller-1	Gen of tiller-2	Gen of tiller-3	Pollen
1956	7109C-4	W+u4	1 Spm	d					
1957	7455	(From kernels on ear of plant 7109C-4)							
	A-1	W+u4	1 Spm	-		d			
	A-2	W+u4	1 Spm	-		vd	vd	vd	
	A-3		1 Spm	-	vd				
	A-4	W+u4	1 Spm	vd		vd	d		
	B-1	W+u4	1 Spm	d		d			
	B-2	W+W+	1 Spm	-	-	d			
	B-3	W+u4	1 Spm	-	-				
	B-4	W+W+	1 Spm	-	-				
	B-5	W+u4	1 Spm	-	-				
	B-6	W+W+	1 Spm	-	-				
	C-1	W+W+	1 Spm	-	-				d
	C-2	W+W+	1 Spm	-	-				
	C-3	W+W+	1 Spm	d					+
	C-4	W+u4	1 Spm	-	-	+			
	C-5	W+u4	1 Spm	-	=	vd			
	D-1	W+W+	1 Spm	-	-				
	D-2	W+u4	1 Spm	-	-				net
	D-3	W+u4	1 Spm	-	-				
Year 1958	7592	(four kernels on 2nd ear, main stalk of plant 7455 B-2)							
	2	W+u4	1 Spm	-					
	3	W+u4	1 Spm	-					
	6	W+u4	1 Spm	-	-				
7593	(from kernels on tiller ear of plant 7455 B-2)								
	A-1	W+W+	1 Spm	vd	vd				
	2	W+W+	1 Spm	vd					
	3	W+W+	1 Spm	-					
	4	W+W+	1 Spm	-					
	5	W+W+	1 Spm	-					
	B-1	W+W+	1 Spm	-					
	B-2	W+W+	1 Spm		d				
	B-3	W+W+	1 Spm	-					
	B-4	W+W+	1 Spm	d					
	B-5	W+W+	1 Spm	d					
	B-6	W+W+	1 Spm						



Table 4 (cont.)

			First ear	second ear	Car of	Car of	Car of	Pollen
			main stalk	main stalk	tiller-1	tiller-2	tiller-3	
7594	(from kernels on 2nd ear, main stalk, of plant 7455 C-9)							
4	W+us	1 Spm	-					
8	W+W+	1 Spm	-					
7596	(from kernels on 2nd ear of tiller of plant 7455 C-5)							
A-1	W+us	1 Spm	nd					
A-2	" "	"	-					
A-3	" "	"	-					
B-1	" "	1 Spm	-			nd		
C-1	us us	1 Spm	-					
C-2	" "	1 Spm	-					

Key to Table 4.

Culture 7455: From diffuse-mottled, BZ, Wx kernels on first ear, main stalk of plant 7109C-4

Cross: 7109C-4,  $a_2 m_1$  (class II) BZ/ $a_2 b_1$ ,  $Wx/wx$ ,  
1 Spm ♀ ×  $a_2 b_1/a_2 b_1$ ,  $Wx/Wx$ , no Spm ♂

Culture 7592: From uniformly pigmented kernels on 2nd ear, main stalk of plant 7455 B-2

Cross: ~~7455 B-2~~  $a_2 m_1$  (class II) BZ/ $a_2 b_1$ ,  $Wx/Wx$ , Spm ♀  
×  $a_2 b_1/a_2 b_1$ ,  $wx/wx$ , no Spm ♂

Culture 7593: From kernels on ear of tiller of plant 7455 B-2

Cross:  $a_2 m_1$  (class II) BZ/ $a_2 b_1$ ,  $Wx/wx$ , Spm ♀ ×  
 $a_2 b_1/a_2 b_1$ ,  $Wx/Wx$ , no Spm ♂

Plants in A: From diffuse-mottled, BZ  $Wx$  kernels

" " B: From colorless, BZ,  $Wx$  kernels with spots of deep pigment.

Culture 7591: From kernels on first ear, main stalk of plant 7455B-2

Cross:  $a_2 m_1$  (class II)  $BZ/a_2 b_1$ ,  $w_+/w_+$ ,  $spu \text{ } \eta \times a_2 b_1/a_2 b_1$ ,  $m_4+/m_4 \text{ } \sigma_7$   
(7308D-2)

Plants in A: From colorless,  $BZ$ ,  $w_+$  kernels with few specks of pigment

" " B: From " " " " with large and small pigmented areas

Culture 7597: From kernels on first ear, main stalk, of plant

7455C-2.

Cross:  $a_2 m_1$  (class II)  $BZ/a_2 b_1$ ,  $w_+/w_+$ ;  $spu \text{ } \eta \times a_2 b_1/a_2 b_1$ ,

$m_4+/m_4 \text{ } spu$  (7308D-1)  $\sigma_7$ .

Plants in A: From colorless,  $BZ$ ,  $w_+$  kernels with few specks of pigment

" " B: " " " " with large + small areas of pigment.

Culture 7595: From kernels on <sup>first</sup> <sup>main stalk</sup> ear of plant 7455C-5.

Cross:  $a_2 m_1$  (class II)  $BZ/a_2 b_1$ ,  $w_+/m_4$ ,  $spu \text{ } \eta \times a_2 b_1/a_2 b_1$

$m_4+/m_4 \text{ } spu$  (7308D-2)  $\sigma_7$

Plants in A: From colorless,  $BZ$ ,  $w_+$  kernels with few specks of pigment

" " B: " " " " large + small pigmented areas

Culture 7594: From herms on ear, main stalk, of plant 7455 C-5.

Cross:  $a_2^{m-1}$  (class II) BT /  $a_2^{bt}$ ,  $w \times w$ , 18 pm ♀ ×  $a_2^{bt}/a_2^{bt}$ ,  $w \times w$ , no sperm ♂

Plants: From uniformly pigmented, BT,  $w \times w$  herms on ear.

Culture 7596: From herms on ear of tiller of plant 7455 C-5.

Cross:  $a_2^{m-1}$  (class II) BT /  $a_2^{bt}$ ,  $w \times w$ , sperm ♀ ×  $a_2^{bt}/a_2^{bt}$ ,  $w \times w$ , no sperm ♂.

Plants in A: From diff. mothers, BT,  $w \times w$  herms

Plant in B: From colorless, BT,  $w \times w$  herms with spots of pigment

Plants in C: fern " "  $w \times w$  " " " " "

Table 5.

Test crosses conducted with plants in culture 7456 (see A, table 2).

Constitution of tester plants:

- Type-1  $a_2$  bt/a<sub>2</sub> bt, Wx/Wx, no Spm.
- Type-2 " " wx/wx, no Spm.
- Type-3 " " wx +/wx Spm (active phase)

Plant Number	Constitution of plant	Type of tester used as pollen parent in cross to					Pollen of plant 7456 to tester type
		First ear, stalk	Second ear, stalk	Ear of tiller 1	Ear of tiller 2	Ear of tiller 3	
A-1	<u>Wx/Wx</u> , no <u>Spm</u>	3	2	1			
A-2	<u>Wx/Wx</u> , no <u>Spm</u>	3					
A-3	<u>Wx/Wx</u> , no <u>Spm</u>	3					1
A-4	<u>Wx/Wx</u> , no <u>Spm</u>		2	1	2		
B-1	<u>Wx/Wx</u> , no <u>Spm</u>	3		1			
B-2	<u>Wx/Wx</u> , no <u>Spm</u>	3		2			
B-3	<u>wx/wx</u> , no <u>Spm</u>	3		1			
B-5	<u>Wx +/wx</u> <u>Spm</u>	3		1	2		
B-6	<u>Wx/wx</u> , no test for inactive <u>Spm</u>	1					
C-1	<u>Wx/Wx</u> , 1 <u>Spm</u>	3		1			
C-2	<u>wx +/wx</u> <u>Spm</u>	3	1				
C-3	<u>wx +/wx</u> <u>Spm</u>	3	2	1	2	2	
C-4	<u>Wx +/wx</u> <u>Spm</u>	3	2	1			1
D-1	( <u>wx +/wx</u> <u>Spm</u> )	1					
D-2	( <u>wx +/wx</u> <u>Spm</u> )	1	1	1	1		
D-3	( <u>wx +/wx</u> <u>Spm</u> )	1					
D-4	<u>wx/wx</u> , 1 <u>Spm</u>	1		3	2		
D-5	<u>wx +/wx</u> <u>Spm</u>	1	2	3	2	2	1
D-7	<u>wx +/wx</u> <u>Spm</u>	1		1	2		1
E-1	<u>wx/wx</u> , no <u>Spm</u>	2		3			1
E-2	<u>wx +/wx</u> <u>Spm</u>	3					1
E-3	<u>Wx/wx</u> , no <u>Spm</u>	1	3	1	3		1

~~Table 5~~ <sup>B</sup> continued Table 6

Type of pollen parent used in cross 6

7455	Constitution of Plant as determined by test crosses.		First ear	second ear	Ear of	Ear of	Ear of	Pollen
			main stalk	main stalk	teller-1	teller-2	teller-3	plant type
A-1	W+us	1 Spm	2		3			
A-2	W+us	1 Spm	2		1	3	3	
A-3	W+W+	1 Spm	3	1				
A-4	W+us	1 Spm	2		3	1		
B-1	W+us	1 Spm	2					
B-2	W+W+	1 Spm	3	2	1			
B-3	W+us	1 Spm	3	1				
B-4	W+W+	1 Spm	3					
B-5	W+us	1 Spm	3	1				
B-6	W+W+	1 Spm	3					
C-1	W+W+	1 Spm	3					1
C-2	W+W+	1 Spm	3					
C-3	W+W+	1 Spm	3					1
C-4	W+us	1 Spm	3		1			
C-5	W+us	1 Spm	3	1	2			
D-1	W+W+	1 Spm	3					
D-2	W+us	1 Spm	3					
D-3	W+us	1 Spm	3					1

kernel = test

Types of cross conducted with plants derived from kernels on ear of plant 7109C-4.

Plants in A, B, and D of culture 7455 derived from diffuse-mottled kernels.

" " C of culture 7455 derived from colorless kernels with spots or speck of pigment.

Constitution of pollen parent in cross:

1 =  $a_2b^+/a_2b^+$ ,  $w+w$

2 =  $a_2b^+/a_2b^+$ ;  $us.us$

3 =  $a_2b^+/a_2b^+$ ;  $w^+ + | us Spm$  - active phase.

Table 7

(class II)  
 Phenotypes of kernels on testcross ears of plant 7308A-4 that was  $a_2^{m-1}$  (class II) Bt/  
 $a_2^{m-1}$  Bt;  $wx +/wx$  Spm-active in constitution.

Part of plant 7308A-4 tested	Constitution of male in cross	Phenotype of Kernel								
		Uniformly pigmented		Colorless with spots or specks of pigment						Colorless
		<u>wx</u>	<u>wx</u>	1 Spm pattern		2 Spm pattern		High dose Spm pattern		
<u>wx</u>	<u>wx</u>	<u>wx</u>	<u>wx</u>	<u>wx</u>	<u>wx</u>	<u>wx</u>	<u>wx</u>			
First ear main stalk	Type 3	70	6	69	9	10	68	3	75	0
Second ear, main stalk	Type-2	107	14	0	0	12	115	0	2	0
Tiller ear	Type-1	142	-	1	-	135	-	4	-	0

Constitution of male: Type-1:  $a_2$  bt/ $a_2$  bt;  $wx/wx$ ; No Spm [Plant 7308D-2]  
 Type-2: " " ;  $wx/wx$ ; no Spm  
 Type-3: " " ;  $wx +/wx$  Spm-active



Table 9.

A.

Phenotypes of kernels

Plant Number	Part of Plant Examined Position of Ear	Uniformly Pigmented		Diffuse-mottled		Colorless spots or streaks of color		Colorless		Totals
		BE	bt	BE	bt	BE	bt	BE	bt	
7455 A-1	1st ear main stalk	166	26	0	0	0	0	21	200	
" A-2	" "	233	12	0	0	0	0	17	220	
" "	tiller-1	150	11	38	0	39	0	15	208	
" A-3	2nd ear main stalk	7	0	1	0	1	0	0	4	
" A-4	1st ear main stalk	140	17	10	1	2	0	11	138	
" "	tiller-2	27	3	6	0	14	1	2	42	
" B-1	1st ear main stalk	136	4	25	4	24	2	7	183	
" B-2	2nd ear main stalk	38	4	0	0	0	0	3	33	
" "	tiller	91	3	17	0	58	7	16	126	
" B-3	2nd ear main stalk	83	10	0	0	0	0	7	93	
" B-5	2nd ear main stalk	61	3	0	0	0	0	3	61	
" C-4	tiller	108	4	0	0	91	4	13	214	
" C-5	2nd ear main stalk	98	13	0	0	0	0	10	93	
" "	tiller	137	16	9	1	3	1	11	170	
B		{ 115 } = 203	{ 17 } = 5	{ 11 } = 20	{ 0 } = 0	{ 32 } = 72	{ 0 } = 2	{ 7 } = 17	{ 165 } = 297	
7455 C-1	pedicel & tiller	{ 88 }	{ 4 }	{ 9 }	{ 0 }	{ 40 }	{ 2 }	{ 9 }	{ 134 }	
" C-3	" " "	27	3	0	0	28	5	4	53	
" D-3	" " "	179	14	2	1	7	1	22	207	

Heading:

A. Phenotypes of kernels on ears of plants in culture 7455 produced from test cross types 1 and 2 entered in table 6.

B. Phenotypes of kernels on ears produced by reciprocal cross.

Table 10A

Phenotype of Kernel	7456B-5					7456C-1		7456C-3		7456C-4		7456D-5		7456D-4	
	7308D-1	7308D-1	7308D-2	7308D-2	7308D-2	Totals	7308D-1	Totals							
Uniformly Pigmented. BE	w+	49	64	27	21	31	192	128							
	wt	44	52	25	25	22	168	-							
" " lt	w+	7	4	1	0	1	13	7							
	wt	7	3	3	5	3	21	-							
Diffuse-mottled. BE	w+	1	0	0	0	1	2	3							
	wt	6	0	0	0	10	16	-							
" " lt	w+	0	0	0	0	0	0	-							
	wt	0	0	0	0	1	1	-							
Colorless, Spots of color BE	w+	39	46	10	34	33	162	59							
	wt	10	2	4	4	0	20	-							
more than 1 <del>2 or 3</del> spots	w+	7	7	2	1	5	22	79							
	wt	39	48	20	32	34	173	-							
" " lt 1 Spot	w+	6	4	1	3	2	16	6							
	wt	2	0	0	0	0	2	-							
" " more than 1 spot pattern	w+	2	0	0	0	0	2	4							
	wt	4	3	2	1	2	12	-							
Colorless BE	w+	18	10	2	4	5	39	13							
	wt	16	12	3	3	4	38	-							
Colorless lt w+ and wt.		211	244	102	138	144	839	236							

To "recombination" Spm - inactive + wt based on BE variegated class = 11.1%

Hearing:  
A.

Phenotypes of kernels on ears resulting from:  
Test cross type-3 conducted with a<sup>2m</sup>(class II) BE / a<sup>2s</sup> lt; w+ / wt Spm plants in B, C, and D, of culture 7456.

B.

Test cross type-3 conducted with a<sup>2m</sup>(class II) BE / a<sup>2s</sup> lt; w+ / w+, 1 Spm plant 7456C-1 and 7456D-4.

Table 11

Phenotype of	7456B-5 E-2	7456C-3 E-2	7456C-3 E-2	7456C-3 E-3	7456C-4 E-2	7456D-5 E-2	7456D-5 E-2	7456D-5 E-3	7456D-7 E-2		
kernel on ear	7321B-6	7321B-1	7321A-3	7321B-4	7321B-1	7321B-4	7321A-3	7321B-4	7321B-4	7321B-4	
uniflorous primitive BT	W+	85	52	61	79	12	77	99	62	47	574
	W-	35	29	17	10	13	68	45	6	42	265
bt	W+	15	2	1	3	1	10	5	3	3	43
	W-	3	0	0	0	0	5	0	0	4	12
Reflux-mottled BT	W+	2	6	6	0	0	0	0	0	0	14
	W-	24	30	46	13	0	0	24	24	5	166
" " bt	W+	0	1	0	1	0	0	0	0	0	2
	W-	0	1	1	0	0	0	0	2	0	4
colorless, spotted BT	W+	8	2	4	9	0	0	0	3	1	27
	W-	37	6	28	43	0	0	26	37	1	178
" " bt	W+	0	0	0	0	0	0	0	0	0	0
	W-	8	1	0	3	0	0	1	0	0	13
colorless BT	W+	6	3	9	4	0	6	9	2	2	41
	W-	10	5	5	0	2	8	12	3	3	48
Colorless/bt W+ + W-	209	141	166	152	31	150	192	109	114	1264	
Totals											

Heading:

Phenotypes of kernels on ears resulting from test cross type-2 conducted with  $a_2 w-1$  (class II) BT/ $a_2$  bt,  $W+/-w$  Spm plants in B, C, and D of culture 7456.

To recombination

Spm to  $w$  based on, variegated BT class =  $\frac{13}{100} \times 100 = 13\%$

tester

Type-2 plant =  $a_2 bt / a_2 bt$ ;  $w+ w-$  no Spm.

Table 12

## Phenotype of Kernel

Plant Number	Position of ear in plant	Uniformly Pigmented		Diffuse-Mottled		with spots colorless, <sup>of</sup> color		Colorless		Total
		BE	bt	BE	bt	BE	bt	BE	bt	
7456B-5	tiller - 1	101	13	13	1	19	1	16	113	
" C-1	tiller	6	1	1	1	2	0	1	12	
" C-2	2nd ear main stalk	191	14	8	0	3	0	11	214	
" C-3	tiller - 1	106	6	31	1	59	6	10	198	
" C-4	tiller	118	8	0	0	0	0	8	136	
" D-1	1st ear main stalk	145	11	0	0	0	0	11	137	
" D-2	1st ear main stalk	128	6	2	0	0	0	9	123	
" "	2nd ear main stalk	166	13	0	0	0	0	13	164	
" "	tiller - 1	40	2	8	0	17	0	1	50	
" "	" - 2	240	20	19	1	2	0	15	265	
" D-3	1st ear main stalk	38	2	0	0	0	0	2	51	
" D-4	1st ear main stalk	132	7	0	0	2	0	15	137	
" D-5	1st ear main stalk	60	3	0	0	0	0	4	56	
" D-7	1st ear main stalk	89	6	0	0	0	0	3	69	
" " "	tiller - 1	138	8	7	0	6	0	6	149	

Heading:

Phenotypes of kernels on ears produced from testcross type-1 produced with plants in culture 7456 that were  $a_2bt$  (class II) BE/ $a_2bt$ ;  $w_+ / w_+$  or testcross types 1 and 2 to  $w_+ / w_+$   $W_+$  plants of culture 7456.

Type-1 plant =  $a_2bt / a_2bt$ ,  $w_+ / w_+$ ; no  $W_+$

"-2 " = " "  $w_+ / w_+$ ; no  $W_+$

Table 13

Phenotypes of kernels on ears produced from cross of female plants with constitutions designated in first column by <sup>when crossed by</sup> male plants with the constitution  $a_2 \underline{bt}/a_2 \underline{bt}; \underline{wx} +/\underline{wx} \underline{Spm}$ -active: Plant 7308D-1 or 7308D-2.

		Phenotypes of kernels									
Constitution of female plants (Class I)	Number of plants	Number of ears	Uniformly dark colored		Colorless with:				Colorless		Totals
			Bt	bt	Many colored spots "1spm" pattern		Only specks "of color" "in dots" "spm pattern"		Bt	bt	
					Bt	bt	Bt	bt	Bt	bt	
$a_2^{m-1} \underline{Bt}/a_2^{m-1} \underline{Bt};$ $\underline{Wx}/\underline{Wx};$ no $\underline{Spm}$	3	3	466	-	437	-	4	-	0	-	907
$a_2^{m-1} \underline{Bt}/a_2 \underline{bt};$ $\underline{Wx}/\underline{Wx}$ or $\underline{Wx}/\underline{wx};$ no $\underline{Spm}$	12	12	812	57	749	42	21	0	101	1606	3388
			Sub-totals, (1) & (2)		1335		1218		25		
$a_2^{m-1} \underline{bt}/a_2 \underline{bt};$ $\underline{Wx}/\underline{Wx};$ no $\underline{Spm}$	11	13	-	1242	-	1210	-	-		2559	5011
$a_2^{m-1} \underline{Bt}/a_2 \underline{bt};$ $\underline{Wx}/\underline{Wx}$ or $\underline{Wx}/\underline{wx};$ 1 inactive $\underline{Spm}$ , not linked with $\underline{wx}$	16	18	1621	126	773	66	768	41	249	3062	6706
$a_2^{m-1} \underline{Bt}/a_2 \underline{bt};$ $\underline{Wx} +/\underline{wx} \underline{Spm}$ - inactive	5	5	378	35	179	18	198	14	77	839	1738
$a_2^{m-1} \underline{bt}/a_2 \underline{bt};$ $\underline{Wx} +/\underline{wx} \underline{Spm}$ - inactive	1	1	-	120	-	41	-	44	-	258	463
			Sub-totals (4) 5) 6)		2280		1077		1065		

Distribution of Wx and wx among phenotypes of kernels on ears entered in cross 4), 5), and 6) of table 1 .

Type of cross, Table	Phenotypes of Kernels												Colorless		Wx and wx
	Uniformly dark colored				Colorless with: Many spots of color				Specks of color						
	Bt		bt		Bt		bt		Bt		bt		Bt	bt	
	Wx	wx	Wx	wx	Wx	wx	Wx	wx	Wx	wx	Wx	wx	Wx	wx	
4)	342	340	23	23	181	165	10	16	167	176	9	5	55	41	1336
5)	194	184	13	22	162	17	16	2	25	173	4	10	39	38	839
6)	-	-	64	56	-	-	36	5	-	-	5	39	-	-	258

Table 15

## Phenotypes of kernels

Plant Number	Number of Ears	Uniformly Pigmented				Colorless with spots of pigment				Colorless				Totals	% accounted for between
		BZ		bt		BZ		bt		BZ		bt			
		W+	w+	W+	w+	W+	w+	W+	w+	W+	w+	W+	w+		
7306A	3	101	23	4	3	22	104	0	1	2	7	248	515	18.5	
7306B-1*	4	33	7	1	0	176	205	6	11	13	21	469	942		
" B-2	1	28	2	1	0	24	60	1	1	7	1	133	258		
7560-1,5	4	18	255	1	11	291	29	17	1	23	17	561	1224	7.8	
7560-3,6	2	53	52	5	3	50	59	2	0	8	9	190	431	0	
7560-4	2	30	31	1	1	164	132	4	5	6	16	371	761	0	

\* in the variegated BZ class of kernels there were 208 showing the "25 pin" pattern (139 W+; 69 w+) and 173 showing the "leafy disc" spin pattern (34 W+; 139 w+).

B.

Plant number	Number of Ears	Uniformly Pigmented				Different-colored				Colorless with spots of pigment				Colorless		Totals	
		BZ		bt		BZ		bt		BZ		bt		BZ			
		W+	w+	W+	w+	W+	w+	W+	w+	W+	w+	W+	w+	W+	w+		
7560-3 1st ear, main stalk		70	56	2	4	7	15	0	1	12	10	0	1	4	6	185	373
" 2nd " " "		33	44	4	3	0	0	0	0	0	1	0	0	3	4	85	177
7560-5 pollen		33	104	2	7	8	1	0	0	11	7	6	0	2	5	241	527

Heading:

A. Phenotypes of kernels on ears of plants in cultures 7306 and 7560, entered in B of table 2, in which spin was in its active phase in cells that produced the ears.

B.

all plants in culture 7306 and 7560 were  $a_2^{m1}$  (class II) BZ/ $a_2$  bt;  $w_+w_+$  in constitution. all crosses of these plants were made with plants homozygous for  $a_2$ , bt, and  $w_+$ , and having no spin.

Table 16

## Phenotypes of kernels

A.	Plant number	Number of ears	uniformly pigmented		Colorless with spots & pigment		Colorless		To Recombination						
			BE	bt	BE	bt	BE	bt							
			W+	w <sub>1</sub> W+	w <sub>2</sub> W+	w <sub>1</sub> w <sub>2</sub>	w <sub>1</sub> W+	w <sub>2</sub> W+	when	Totals					
	7307B-1	10	543	73	31	3	67	537	8	41	40	53	1201	2597	11.5
	7307B-2	3	145	27	13	6	35	165	2	9	12	19	372	865	17.4
	7307B-3	4	140	15	11	1	137	266	8	10	18	23	565	1154	
	7307B-4	2	97	7	8	2	120	164	5	4	14	29	386	831	
	7561-3,4,5	4	34	315	2	26	295	18	21	0	23	29	657	1420	7.6
	7561-4 1st ear, main stalk 8 rows, 4 rows		7	61	1	8	43	3	5	0	4	1	87	220	8.5
			26	20	1	4	0	0	0	0	2	0	51	104	
	7562	4	26	203	1	12	186	5	7	1	18	12	456	927	7.4
	7572	6	281	58	18	2	60	285	2	13	29	25	674	1447	16.9

## B

Plant number	Position of ear	uniformly pigmented		Differ-Uniformly		Colorless, Spots & pigment		Colorless		Totals							
		BE	bt	BE	bt	BE	bt	BE	bt								
		w <sub>1</sub>	w <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>	w <sub>1</sub>	w <sub>2</sub>								
7561-1	1st ear, main stalk																
7561-2	1st ear, main stalk	98	78	11	7	8	0	0	0	0	180	403					
" - 2	2nd ear, main stalk	92	101	11	10	1	0	0	2	1	0	187	431				
7562-3	1st ear, main stalk	9	22	4	2	0	0	0	0	0	0	1	2	27	67		
7572-4	1st ear, main stalk	108	-	10	-	13	-	0	-	15	-	0	-	16	-	140	302
7572-5	1st ear, main stalk	58	64	7	5	0	0	0	0	1	0	0	0	6	8	121	270
" "	2nd ear, main stalk	94	47	9	4	0	7	0	0	4	29	0	2	7	13	176	387
7307A-1	1st ear, main stalk	75	-	13	-	7	-	0	0	27	-	1	-	13	-	136	272

Heading: Phenotypes of kernels on ears of plants entered under Years 1957 and 1958 of C of Table 2. All plants were a<sub>2</sub>m-(class II) BE/a<sub>2</sub>bt and all except plants 7307A-1 and 7572-4 were w<sub>1</sub>/w<sub>2</sub>. The latter two plants were w<sub>1</sub>/w<sub>2</sub>. Pollen used in making each cross came from a plant homozygous for a<sub>2</sub>, bt, and w<sub>1</sub> and having no Spm.

Table 17

Phenotypes of kernels

A.

Plant Number	Number of ears.	Uniformly Pigmented		Colorless with spots & deep pigment				Colorless				Total	Recombination %	
		BE	bt	BE	bt	BE	bt	BE	bt					
7547A	4	28	241	3	21	261	14	28	1	33	28	494	1152	7.7
" C-2	1	0	25	0	2	28	2	1	0	2	1	49	110	5.1

B.

Plant No.	Position of ear	Uniformly Pigmented		Differently pigmented		Colorless spots & deep pigment				Colorless		Total					
		BE	bt	BE	bt	BE	bt	BE	bt								
7547A-1	tiller - 2	12	43	0	4	11	0	0	0	21	1	0	0	2	1	89	184
" A-5	2nd ear, main stalk	17	9	0	2	0	0	0	0	1	0	0	0	1	1	17	48
7547B	tiller	12	41	0	1	7	0	0	0	17	1	1	0	2	1	60	143
" C	1st ear, main stalk	79	89	7	6	6	1	2	0	3	0	0	0	5	1	161	366
Totals		131	254	10	26	27	2	2	0	109	3	10	0	23	14	472	1083

C.

Plant No.	Position of ear	Uniformly pale pigmented		Colorless with spots of deep pigment. Few or no spots				Colorless with spots of deep pigment and large pale areas				Colorless		Total			
		BE	bt	BE	bt	BE	bt	BE	bt	BE	bt						
7547A-1	2nd ear, main stalk	33	27	4	6	36	1	2	0	0	30	0	1	6	8	131	285

x 7583-3 of 7  
at 1st ear 15mm

Heading:

Table 17

## Phenotypes of kernels

Plant number	Position of ear	Type of ear in cross	Uniformly Pigmented				Colorless, spots of pigment				Colorless				Totals	
			BE	bt	BE	bt	BE	bt	BE	bt	BE	bt				
7582A	near main stalk	Type-2	113	88	11	10	0	0	0	0	0	9	5	185	421	
"	"	tiller	45	29	1	1	36	3	1	42	0	3	11	6	138	316
" B-1	near main stalk	Type-3 ispm	34	45	1	1	29	4	4	45	1	2	3	5	140	314
" B-2	"	"	65	64	3	8	56	4	9	58	9	6	15	11	266	574
Totals, Type-3, ispm ear			144	138	5	10	121	11	14	145	10	11	29	22	544	1204
291 non-ispm			8.5% recombination													

Table 18

Plant number	Position of ear	Type of ear	Uniformly Pigmented				Colorless, spots of deep pigment				Colorless		Total	
			BE	bt	BE	bt	BE	bt	BE	bt				
7582B-3	near main stalk	Type-3 ispm	27	24	2	0	75	98	6	10	16	28	225	511

\* A number of these kernels showed large pale areas.

† Very few of these kernels exhibited pale areas.

Table 19

## Phenotypes of kernels

Plant number	Location	Type of Test cross	Uniformly pigmented				Colorless, spots & pigment				Colorless				Total
			BI		bt		BI		bt		BI		bt		
			W+	w+	W+	w+	W+	w+	W+	w+	W+	w+	W+	w+	
7313															
A-1	1st ear, main stalk	Type-1	123	-	5	-	26	-	1	-	6	-	164		
A-2	"	Type-1	256	-	11	-	6	-	2	-	16	-	234		
A-2	tiller	Type-2	83	5	2	1	6	67	0	3	3	3	193	7.1%	
B-1	1st ear, main stalk	Type-2	53	22	6	2	5	18	0	1	3	2	121		
B-2	1st ear, main stalk	Type-1	195	-	15	-	5	-	2	-	22	-	226		
B-3	"	Type-2	81	54	6	3	0	13	0	1	2	2	135		
B-4	"	Type-2	29	24	1	0	74	58	4	1	5	7	206		
B-4	tiller-1	Type-1	64	-	4	-	46	-	2	-	4	-	125		
B-4	tiller-2	Type-2	25	2	1	0	8	35	0	0	1	0	45		
B-5	1st ear, main stalk	Type-1	101	-	10	-	98	-	4	-	17	-	228		
B-5	2nd ear, main stalk	Type-2	53	-	5	-	45	-	0	-	6	-	100		

Table 20

## Phenotypes of berries

Plant number	Position of ear	uniformly pigmented				Colorless with spots of pigment				Colorless				Totals
		BT	bt	BT	bt	BT	bt	BT	bt	BT	bt	BT and bt		
7309A-3	1st ear, main stalk	38	11	0	1	5	32	1	2	4	4	93	191	
" "	tiller	45	11	3	0	7	41	0	3	7	3	112	232	
" A-4	tiller-1	57	2	1	0	8	60	0	4	2	5	118	257	
" A-5	tiller-1	76	10	5	1	11	68	2	3	4	5	158	343	
" A-8	1st ear, main stalk	41	2	4	0	5	34	0	6	4	6	98	200	
Totals		257	36	13	2	36	235	3	18	21	23	579	1223	

12.8% recombination

crosses A-9 cross  
A-6 "

H heading:

Phenotypes of berries on ears of plants in clusters 7309A, which were  $a_2 m^1$  (class II) BT/ $a_2$ bt,  $wx^+ / wx$  Spm in constitution, produced by a cross with a plant homozygous for  $a_2$ , bt, and  $wx$ , and having the Spm.